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Further Notes on the Oak-feeding Species of *Phyllonorycter* Hübner (Lep.: Gracillariidae)

By D. W. H. ffennell*

Since 1968 I have been collecting *Phyllonorycter* mines on oak from various localities in Herefordshire in search of the rarer species, though only in the last two years have I met with success, for reasons which I will discuss later. Accordingly, Colonel Emmet's paper on this subject in this issue sent me scurrying to my notebooks to see whether I could throw any further light on the question of voltinism in these species.

The following table gives the dates of emergence of the various species bred in 1974 and 1975. Since the mines from the different localities were brought into the warm on different dates, there is no significance in the actual emergence dates, but only in the sequence of emergence in any one locality.

1973/74	Linton Map Ref. SO/6525	<i>P. harrisella</i> (Linn.) <i>P. quercifoliella</i> (Zell.) <i>P. muelleriella</i> (Zell.)	Mar. 17 Mar. 8, 16(2), 17 Apr. 15
1974/75	Linton. Map Ref. As above	<i>P. harrisella</i> <i>P. heegeriella</i> (Zell.) <i>P. quercifoliella</i> <i>P. muelleriella</i> <i>P. distentella</i> (Zell.)	Apr. 19 Apr. 12(2), 15, 17, 18 Mar. 31, Apr. 9(3) Apr. 11, 20 Apr. 11, 12
	Monnington. Map Ref. SO/3544	<i>P. roboris</i> (Zell.) <i>P. quercifoliella</i>	Mar. 27 Mar. 23, 26(2) 31, Apr. 1
	Woolhope. Map Ref. SO/6135	<i>P. roboris</i> <i>P. harrisella</i>	Mar. 28 Apr. 6
	Hough Wood. Map Ref. SO/5936	<i>P. roboris</i> <i>P. harrisella</i> <i>P. heegeriella</i> <i>P. quercifoliella</i>	Apr. 2, 10, 16(2) Apr. 6, 14, 18 Apr. 15, 19, 27 Mar. 27, Apr. 4, 5, 6, 14

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No certain deductions can be made from such a small sample. However, it seems that *P. roboris* has been commoner in 1975 than for many years, and as it is not clear whether this is a trend or an exception, we should perhaps draw such inferences as we can, for fear that no better opportunity may arise. The following possibilities suggest themselves:—

- (1) *P. quercifoliella* is the earliest to emerge.
- (2) *P. heegeriella* is the latest to emerge.
- (3) There is no evidence that *P. roboris* or *P. distentella* are univoltine.
- (4) There is an indication that *P. muelleriella* may be partially univoltine. The specimen which emerged in 1974 four weeks after all others in that batch would probably have emerged in June in the natural state.

This last inference, coupled with Col. Emmet's suggestions regarding *P. roboris*, raises the possibility that both these species may be partially univoltine in Herefordshire. Unfortunately there seem to be no records of *P. distentella* from further north, but if somebody could visit the northern localities of *P. roboris* and *P. muelleriella* at the appropriate dates he might discover, by taking the moths in the field, whether they are univoltine there.

Now for the reasons why I have only recently succeeded in breeding these species:—

(1) In previous years I collected fallen leaves from mature trees, being under the impression that the rare species were overhead canopy feeders. In the autumn of 1974 I altered my method, and collected *only* from young trees, saplings and hedgerow bushes.

(2) Partly by chance and partly because they seemed to harbour more mines, most of the trees under which I collected before 1974 were *Quercus robur*. In 1974, however, mines were taken impartially from *Q. robur*, *Q. petraea* and *Q. cerris*. Recently I dissected those mines from which a predator, or nothing, had emerged, and identified them where possible with the following result:

	<i>Q. cerris</i>	<i>Q. robur</i>	<i>Q. Petraea</i>	
<i>P. roboris</i>	6		4	
<i>P. heegeriella</i>		7		
<i>P. muelleriella</i>	2			
<i>P. distentella</i>		5		

There is food for thought in that both mines of *P. muelleriella* were on *Q. cerris*, which Hering states to be the only foodplant of the species; whereas the records quoted by Col. Emmet from Cheshire, Lancashire and Westmorland are said to have been from *Q. petraea* and possibly *Q. robur*.

My mines were collected too late in the year for differences in the upperside of the leaf to be very noticeable. There were, however, characters in the epidermis of the underside which may help to distinguish the rarer species from each other:—

(1) *P. roboris*. Light in colour, smooth, even texture, no wrinkle. Pupa case blackish brown.

(2) *P. distentella*. Darker than *P. roboris*, strongly wrinkled along the centre, becoming less so towards the edges where it is smooth. Pupa case golden brown.

(3) *P. muelleriella*. Much the darkest of the three, about the same colour as the leaf. Deeply and evenly corrugated over the whole surface. Pupa case dark brown.

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Current Literature

Carabologia: Revue trimestrielle de Carabologie. Ed. Michel **Tarrier and Jean Delacre**. No. I: 43 pp., 24 x 15.5 cm., stiff covers. Subscription for 1975: 85.00ff.

This new three-monthly French journal marks a departure in being devoted to a single insect family—the Carabidae or ground-beetles of the world. The emphasis appears likely to be at first upon the great genus *Carabus*, with various S. European members of which this first issue is wholly concerned; these are large beetles of outstanding beauty whose graceful forms and bold, varied sculpture are often enlivened with splendid metallic hues. Unfortunately, the endless geographical and other variations they present have given rise to a vast proliferation of infra-specific taxa, including named races, “quasi-species”, “citra-species”, subspecies, “nationes”, forms, varieties, aberrations, etc. One has only to glance at the caption (inside cover) to the fine colour photograph outside, for an example of this cumbersome apparatus; and, we at least, cannot but sympathise with M. Thierry Deuve’s eloquent plea (pp. 4-5) for simplification. He points out, for instance, that the unusual degree of biological plasticity shown by these insects cannot really be reflected by a rigid hierarchial system of nomenclature, however elaborate. The editorial aim, indeed, is to inject some reasoned order into the chaos. M. Tarrier contributes the bulk of this number, which is illustrated profusely with excellent photographs mostly of whole beetles. The production, quality of paper and printing, and general presentation, is first-rate; and we echo the hope that *Carabologia* will prosper.—A.A.A.